REMARKS

Claims 15-26, and 29-34 are pending in the application. Claims 20-25 have been withdrawn pursuant to an election of species requirements. Claims 29-34 are added by this amendment. No claims are presently allowed.

New claims 29 and 31 recite that the second laser or laser beam decomposes the source material to transform it to the material of interest. Support for this amendment is found at page 10, lines 3-5.

New claims 30 and 32 recite that the first laser or pulsed laser beam has an energy chosen to vaporize one or more monolayers of the coating adjacent to the target substrate without decomposing the rest of the source material. Support for this amendment is found at page 14, lines 16-19.

New claims 33 and 34 recite that there is a gap between the target substrate and the receiving substrate. Support for this amendment is found at page 16, lines 8-9.

Claim Rejections – 35 U.S.C. § 103

The Examiner rejected claims 15-19 and 26 under 35 U.S.C. § 103(a) as being unpatentable over Bills (US 5,308,737) in view of Palazzotto (US 5,376,428).

The invention of claim 15 is a method for creating a deposit of a material of interest on a receiving substrate. A first laser is directed through a laser-transparent target substrate having a coating that comprises a source material to cause the source material to be removed from the surface of the support and deposited on a receiving substrate. A second laser is directed to strike the deposited source material to transform the source material into the material of interest.

Bills discloses a laser transfer process where a donor element is placed in intimate contact with a receptor sheet (col. 11, lines 48-50). The donor element has a backing layer, a radiation absorbing material, a gas forming composition, and a thermal mass transfer material (col. 1, lines 60-66). Bills discloses that the thermal mass transfer material may be a monomer, oligomer, or cross-linkable resin (col. 10, lines 34-36).

Palazzotto discloses an energy polymerizable composition having an ethylenically-unsaturated monomer. A laser may be used to polymerize the composition (col. 15, lines 21-40).

In order to make a *prima facie* case of obviousness, the references must disclose each

limitation of the claims. Bills does not disclose that the source material is deposited on the receiving substrate. Although the reference does disclose a source material to be transferred, it is silent as to what form that material is after it is transferred. When the source material is curable, such as a monomer, oligomer, or cross-linkable resin, it is likely to be cured during the transfer, given that enough energy is used to completely decompose the gas forming composition. If the material is cured during the transfer, the adhesion and/or uniformity of the material could be compromised. There is no express or inherent disclosure of a deposited source material in Bills. Neither is the limitation disclosed in Pallazzotto, which is not directed to laser transfers.

Further, Bills differs from the present invention in that there is a black metal laser absorbing layer coated on the transparent support (Abstract). (Although the Summary of the Invention discloses that the layers may be in different sequences, the rest of the patent only discloses the black metal layer as being on the substrate. This would appear to the only way that the disclosed invention would be functional. Table 1 shows the use of plain PET, but not with a curable thermal transfer material.) This prevents direct interaction between the laser pulse and the gas forming composition and/or thermal mass transfer material, and may protect the thermal transfer material from the laser. The black metal layer is essentially part of the substrate, which is no longer laser-transparent. However, in the present claim 15, the substrate is laser-transparent throughout its thickness. The first laser directly strikes the coating comprising the source material. This limitation is not disclosed in Bills, nor in Pallazzotto, which is not directed to laser transfers. There is also the possibility that some of the black metal layer could also be removed from the target substrate and transferred. This could interfere with the second laser in the present invention and result in an incomplete transformation of the source material. In the case of fabricating electronic components, this could also be detrimental to the electrical properties of the material of interest.

The *prima facie* case also requires a showing of a motivation to combine the references. The Examiner stated that Bills discloses that the material may be transferred in an uncured state and that Pallazzotto discloses that materials may be cured with a laser. However, the references cannot be combined in the manner suggested by the Examiner. Bills states that the laser must heat the layer containing the thermal transfer medium to at least 150°C or preferably at least 200°C (col. 12, lines 45-47). Pallazzotto states that polymerization can be carried out at room

temperature or can be accelerated in a temperature range of 30-200°C or preferable 50-150°C (col. 14, lines 22-31). All of the examples in Pallazzotto use various lamps for curing, which would not be expected to raise the temperature to the level used in Bills. If the transfer method of Bills were used with the polymerizable composition of Pallazzotto, the composition would be polymerized when the laser of Bills was used. This may prevent the transfer or be detrimental to any material that is transferred. It may even be the intent of Bills that the uncured material would be cured during the process. In any case there would be no need to treat the transferred material with a second laser, as in Pallazzotto, as curing would already have taken place. Thus there is no motivation to combine the references.

As to claims 18 and 19, the Examiner stated that Bills discloses transfer of metals and curing agents, that Palazzatto discloses that organometallic compounds are used as curing agents, and that it would have been obvious to use organometallic compounds in the process taught by Bills. Claim 18 is to the method of Claim 15 wherein the source material is a homogeneous mixture of an organometallic compound and a metal powder. Claim 19 recites specific organometallic/metal combinations.

There is no motivation to combine the references in the manner suggested by the Examiner. The curing agent in Palazzotto is a combination of an organometallic compound and an onium salt. This curing agent is used to cross-link an ethylenically-unsaturated monomer with a polyurethane or epoxy monomer (abstract). There is no suggestion or motivation in Palazzotto to use this curing agent with a metal powder, as no curing would occur. Likewise, the only materials disclosed in Bills that could be cured are monomers, uncured oligomers, and cross-linkable resins (col. 10, lines 34-36). There is no suggestion or motivation in Bills to combine a metal powder with a curing agent.

Claims 16 and 17 depend from and contain all the limitations of claim 15 and are asserted to distinguish from the references in the same manner as claim 15. Claim 26 (and 31, 32, and 34 dependent thereon) differs from claim 15 primarily in that claim 26 recites a "pulsed laser beam" and a "laser beam" instead of a "first laser" and "second laser," Claims 26, 31, 32, and 34 are asserted to distinguish from the references in the same manner as claim 15.

New claims 29 and 31 recite that the source material is decomposed to form the material of interest. Bills does not disclose the transfer of a material that may be decomposed. The

disclosed materials are polymerized. Although Bills discloses a gas forming composition that is decomposed, this is the means of the transfer, not the material that is transferred.

New claims 30 and 32 recite that the first laser or pulsed laser beam has an energy chosen to vaporize one or more monolayers of the coating adjacent to the target substrate without decomposing the rest of the source material. Bills does not disclose this method of transfer. Instead Bills uses a gas forming composition that decomposes throughout the thickness of the thermal transfer medium layer.

New claims 33 and 34 recite that there is a gap between the target substrate and the receiving substrate. In Bills, the substrates are in direct contact without a gap. (col. 12, lines 30-35).

Double Patenting

The Examiner repeated the double patenting rejection from the previous office action of claims 15 and 26 over Chrisey (US 6,177,151), stating that the terminal disclaimer filed in the previous response was not signed by an attorney of record. Attached is a new terminal disclaimer signed by Barry Edelberg, an attorney of record. As the terminal disclaimer fee was paid in the previous response, no fee is due for this submission.

In view of the foregoing, it is submitted that the application is now in condition for allowance.

In the event that a fee is required, please charge the fee to Deposit Account No. 50-0281,

and in the event that there is a credit due, please credit Deposit Account No. 50-0281.

Respectfully submitted,

John J. Karasek
Reg. No. 36, 182
Phone No. 202-404-1552
Associate Counsel (Patents)
Naval Research Laboratory
4555 Overlook Ave, SW
Washington, DC 20375-5325

Prepared by:
Joseph T. Grunkemeyer
Reg. No. 46,746
Phone No. 202-404-1556

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Joseph T. Grunkemeyer